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54 **Microwave thermographic apparatus.**

57 Microwave thermography apparatus comprises a signal-receiving aerial (2) which is sensitive to microwave radiation emanating from a body having a mean body temperature. A reference load (1) capable of being maintained at a chosen temperature ( $T_0$ ) and of emitting a thermal noise signal at microwave frequency corresponding to temperature  $T_0$ , is connected to a receiver (3) the input impedance of which is matched to the impedance of reference load (1) by way of a 3-port non-reciprocal circulator (5). Aerial (2) is connected via a single-throw on/off microwave switch (6) to the input of receiver (3) through the other port of circulator (5). The connections to circulator (5), taken in circulation order, are reference load (1), aerial (2), receiver (3). Aerial (2) is preferentially designed to incorporate a tubular metallic waveguide (10) of circular cross-section dimensioned to support  $TE_{11}$  wave mode and the lower order mode, the signal output from the aerial (2) being taken by a coaxial line and the aerial (2) incorporating a broad band waveguide coaxial line mode transformer (11,12) which is arranged to select only the  $TE_{11}$  mode for delivery to the coaxial line. The waveguide (10) is filled with a low-loss dielectric material (13) in order to provide the aerial (2) with an impedance close to the mean body tissue impedance (about 80 ohms).

**EP 0 294 854 A3**



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	L'ONDE ELECTRIQUE, vol. 60, no. 12, December 1980, pages 30-36, Paris, FR; A. MAMOUNI et al.: "Thermographie micro-onde" * Pages 32-33 * ---	1	G 01 R 29/08 G 01 K 11/00 H 01 P 5/103 A 61 B 5/00
A	ELECTRONICS LETTERS, vol. 14, no. 6, 16th March 1978, pages 194-195; K.M. LUDEKE et al.: "Radiation balance microwave thermograph for industrial and medical applications" * Whole document * ---	1	
A	DE-A-1 591 703 (TELEFUNKEN PV) * Pages 6,7; figures 6,7,9 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			G 01 R 29/08 H 01 P 5/103 A 61 B 5/00
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23-11-1988	Examiner BOEHM CH. E. D.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	